WHITEPAPER

YOUR CTE GROWTH PLAYBOOK:

4 Strategies to Expand CTE Access and Enrollment

Interplay Learning

Navigating the CTE Landscape

As a CTE educator, you offer students a transformational gift. After completion, students of all backgrounds will have not only a job, but a career. The confidence and earning potential they gain can change the trajectories of their lives.

Where the challenge lies is meeting students along their journey. Equity issues, family obligations, and learning differences may prevent diverse student populations from starting or completing a program. This challenge calls for a paradigm shift in how CTE programs approach learning and where—or what—a CTE classroom is.

All CTE programs aspire to enrollment growth and student retention, but what are the tools and approaches needed to effectively scale a program? Walk through this guide to discover four core tactics to scale your program to its full potential and offer students equitable access.

Today's CTE Student

Many CTE students today have at least one characteristic of a "post-traditional" learner. That means they have at least one factor—eg. socio-economic status, race, or a disability—that raises barriers to success in a traditional classroom.

Defying challenges, CTE students outshine their non-CTE peers in on-time high school graduation, college enrollment, employment and earnings after graduation.[4]

While CTE gender enrollment is overall fairly even, gender imbalances persist in specific areas. Research has found[1] that women as well as Black and Hispanic students remain significantly under-represented in STEM CTE programs.[1]

85%
of post-secondary students have characteristics of "post-traditional" learners[7]

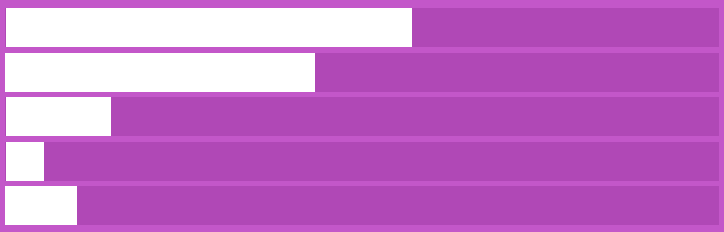
43%
of CTE concentrators identify as from an economically disadvantaged family[5]

NEARLY 1/4
Nearly 1/4 of post-secondary students are parents[7]

8%
of CTE concentrators identify as individuals with disabilities[5]

94%
of secondary CTE concentrators graduate on time, compared with 86% of non-CTE peers[4]

CTE concentrators self-identified by race:[5]



65% White
43% Hispanic/Latino
13% Black/African-American
4% Asian
7% Two or more races, unknown race, or other

TODAY'S CTE STUDENT

Scaling to Success: Indiana County Technology Center

Five years ago, Indiana County Technology Center (ICTC) in Indiana, Penn. began to see more high school and adult students coming through its doors. As its HVAC program enrollment more than doubled in three years, ICTC needed to revamp its CTE program to scale, adapt, and retain students.

Challenges

- Time constraints on instructors for increased lesson planning, grading, and student assessments
- Rising expectations from digital native students for interactive learning
- Limited capacity for one-on-one lab instruction and personalized feedback with larger classes

To address these challenges, ICTC adopted an immersive skilled-trades training program to complement traditional classroom instruction. The HVAC/R program powered by Interplay Learning gave students a clear roadmap to practice their skill competencies, build confidence, and prepare for industry certification exams and real-world scenarios.

Interplay Learning in Practice

- ICTC instructors cast simulations and demonstrate skills live or have students practice and troubleshoot in small groups
- 3D and virtual reality simulations allow more hands-on learning both inside and outside of the classroom
- Instructors assign weekly courses and quizzes as homework to reinforce competencies
- In the shop with limited equipment, students rotate between using a machine and practicing the same skill on the 3D interactive simulation

"I like that I can teach a lesson in the classroom, or do a lab demonstration, and then assign them the corresponding Interplay Learning course where they can see the same concepts visually, through images, videos, or diagrams," said DJ Mumau, HVAC instructor at ICTC.

Outcomes

- Higher enrollment and retention rates
- Higher student confidence and material mastery
- Increased safety with students practicing fieldwork virtually first
- Lower lab equipment damages and material costs

100%
of ICTC students graduated with at least one industry-recognized certification

81%
of graduates continued in the HVAC field or post-secondary education

100%
of graduates who took the state NOCTI exam passed with Advanced or Proficient overall scores

"The Interplay Learning program allows us to keep the students on task and engaged in our educational process. Quite frankly, we fell in love with it. Our instructors can assign different modules without the expense of using a lot of our consumables and without the wear and tear of our equipment. The students get valuable experience, and when we are able to put them on live equipment, they can perform at a much higher level."

Michael McDermott
Administrative Director, ICTC

1 Create Flexible Learning Options for Students

Face-to-face learning is important, but it comes at a cost. Getting your students to show up ready to learn is the first challenge your CTE program must tackle.

Many adult learners have work and family obligations like childcare or elder care. 81% have part-time jobs, and 43% have full-time jobs.[7] At the high school level, bus transportation and demanding class schedules can limit high school students' capacity to complete CTE programs. At any age, barriers like weather, illness, mental health, and the time and cost of commuting keep students from class.

Challenges

- Conflicting work and class schedules
- Family obligations including child and elder care
- Transportation

Solutions

Flexible learning options allow students the chance to complete at least some of their classwork online, on their own schedule. With this approach, you can bring the classroom to your students and remove access barriers.

Asynchronous virtual learning can significantly reduce hurdles without sacrificing your student experience or outcomes. Once students have mastered the theory and completed virtual simulations, they can maximize their lab time and face-to-face discussions with instructors.

Simulation-based training allows students hands-on practice with fewer logistical challenges and space constraints. Virtual lab environments can augment on-site fieldwork with interactive, unlimited practice.

Outcomes

Higher student enrollment and retention

2 Scale Your Program with 3D and VR Simulations

Once you have students enrolled and in class, you must ensure that your curriculum is engaging and makes the best use of resources. At first glance, physical space constraints and slim budgets challenge your program growth. However, this simply calls for a different approach to maximize your physical resources.

Challenges

- Classroom space
- Cost of materials
- Flat or diminishing budgets
- Safety in the classroom

Solutions

3D and virtual reality simulations let you optimize your physical spaces and materials by enabling student readiness before going into the field.

"The way the simulations are set up is really cool—it's actually fun to use in the shop," said John Martineau, a Sr. HVAC student at ICTC. "We have a limited amount of space and tools. We can only fit so many furnaces and ACs, and we have almost 30 students, so we all have to share and take turns. If somebody's using a machine I would like to use, I can just hop on a 3D interactive and do the exact same thing they're doing but online."

There's another important aspect to 3D and VR simulations: Safety. Letting students learn through trial and error and failure in a safe environment first means better outcomes and increased safety in the lab or field.

Above all, this technology brings scalability. The more students you enroll, the better ROI you'll achieve on your investment without needing to double your budget.

Outcomes

- Cost savings
- Scalability beyond physical space
- Improved safety
- Increased student engagement

"The safety aspect is very important, especially when you're dealing with objects that are sharp. We use flame, we use live electricity, and when you're able to practice in a virtual environment you can learn a lot of the lessons safely without going through the experience of being injured and then learning the lesson."

Michael McDermott
Administrative Director, ICTC

3 Offer Diverse Learning Formats for Learners

"School just wasn't for me." Have you ever heard this phrase come out of a student's mouth? Many students, particularly those with neurodivergent learning styles, have struggled through traditional classroom environments because the curriculum wasn't suited to their learning style. Your curriculum needs auditory, visual, and tactile components to engage students and help them retain the material.

Challenges

- Student disengagement
- Negative perceptions of the trades
- Access issues for neurodivergent students
- Low literacy levels

Solutions

Adapting all of your course materials for individualized learning plans can be resource-intensive and costly. Instead, adopt a learning platform that offers multiple modes of learning for different learning styles.

Course delivery matters: Many students struggle to learn through long lectures and reading. Video formats in particular appeal to Gen Z students and auditory and visual learners.

Look for unlimited practice and personalized learning so that struggling students can reinforce challenge areas, and advanced students can advance. There's also evidence that emerging technologies like VR can forge an emotional connection with learning to help students learn faster and stay focused and engaged. A PwC study found that students using VR technology felt 3.75 times more emotionally connected to the content.[9]

By appealing to diverse learning styles and catering to individual learning paces, these technologies make CTE programs more inclusive and accessible to a wider range of students, including those with different learning abilities and preferences.

Outcomes

- Inclusive programs
- Improved student engagement
- Higher material retention and certification pass rates

8 seconds:
The average attention span of Gen Z students [8]

78%
of Gen Z students learn best by doing/creating, compared with just 37% by reading [2]

89%
of Gen Z students prefer personalized learning products [2]

4 Virtual Teaching Assistant for Student Success

Student support is key in guiding students through a CTE program from start to finish. Strong relationships translate to strong outcomes for students, particularly when attendance barriers arise.

Challenges

- Student dropout
- Instructor burnout and attrition

Online learning like videos and automated feedback lessen the burden on teachers, freeing them up to give 1:1 support where students need it most. Student support can take place in several different ways:

Instructor support. Giving students individualized feedback and 1:1 support is powerful, but challenging, for busy instructors facing burnout.

School counselors. The role of school counselors is particularly important in boosting outcomes because they maintain relationships with both the CTE centers and the students they support, helping to navigate access issues and find wraparound services.

Virtual support. Another resource for CTE students is virtual assistants like SAM, Interplay Learning's AI-powered advisor for the skilled trades. SAM can give instant and personalized guidance for skills training when students need help. Rather than simply feeding answers, SAM prompts learners to think critically.

Relational support is a powerful supplement to coursework and can occur in virtual or traditional settings. Virtual support from counselors, teachers, mentors, or even an AI assistant can help boost students' engagement and retention.

Outcomes

- Higher retention and completion rates
- Greater student confidence entering the workforce

Key Takeaways

Today's post-traditional CTE students balance work, family obligations, and learning differences that pose barriers to traditional classroom learning. Beyond these challenges, the new generation of Gen Z learners filling high school CTE classrooms crave a different type of learning. They prefer hands-on, immersive learning with multiple modes of engagement.

Here's how to launch your journey in meeting these needs and shifting preferences:

1. Start with a self-assessment to recognize the access barriers that your student population may face and how well you are meeting their needs.
2. Explore strategies for scaling CTE programs effectively, including flexible learning options, immersive training programs, and virtual simulations to accommodate diverse student needs and enhance learning experiences.
3. Employ interactive learning components that allow students to interact with learning materials in their preferred learning style.

Maximize your physical space and resources, engage students, and improve safety by incorporating 3D and virtual reality simulations into the curriculum. Simulations enable students to practice skills in a safe environment and enhance engagement.

A flexible, personalized approach fosters a supportive and empowering environment that encourages students to explore and excel in their chosen technical fields.

"For most post-traditional learners, learning that feels relevant and inclusive is important. Programs offered in a flexible and affordable manner are essential. Perhaps the tie that binds this diverse population of learners together most aptly is a nearly universal desire to strive for themselves and their families, whether that is through updating skill sets, increasing earning potential, or starting a new career path. Systems of higher education can and must be designed to embrace this."

The Accelerating Recovery through Credentials Adult-Ready Playbook, Education Strategy Group

Product Spotlight: Interplay Learning

Enhance your curriculum with 3D and VR simulations for CTE students today. When it's time to start, scale, or enhance your program, Interplay Learning is ready to raise your capabilities with turnkey interactive technology.

Interplay Learning's platform includes:

- Courses, simulations, and knowledge checks that align with classroom theory and labs
- Unlimited 3D "field-like" simulations for students to safely practice troubleshooting from anywhere
- A unified platform for instructors to assign, test, and grade coursework all in one place, saving time and preventing burnout

Immersive, interactive technology won't replace classroom and field training anytime soon, but it does belong in your blended learning curriculum. It's what your students deserve.

Appendix

1. Racial/Ethnic and Gender Equity Patterns in Illinois High School Career and Technical Education Coursework
2. Gen Z in the Classroom, Creating the Future
3. Who is the Modern CTE Student? A Descriptive Portrait of Career and Technical Education Students in Texas
4. Bridging the Skills Gap: Career and Technical Education in High School
5. A Deep Dive into 2021-22 Perkins V Data
6. Perkins Collaborative Resource Network, National Enrollment Profile
7. The Adult-Ready Playbook, A Comprehensive Policy and Practice Guide to Improve Outcomes for Post-traditional Learners
8. Nurse Educators Meet Your New Students: Generation Z
9. What does virtual reality and the metaverse mean for training?

Start Your Journey with Interplay Learning

Ready to transform your CTE program?
Contact our team to get started.

Contact: sales@interplaylearning.com
or visit interplaylearning.com